

1 We claim:

- 2 1. A method for improving performance of liquid-type fuel cells comprising:
3 providing a liquid-type fuel cell having a fuel and a catalyst, and
4 incorporating into the fuel a fuel additive to reduce CO poisoning to the catalyst.
- 5 2. The method of claim 1, wherein the fuel additive comprises hemoglobin.
- 6 3. The method of claim 2, wherein the amount of hemoglobin is in the range of
7 0.0001-1% by weight.
- 8 4. A method for improving performance of liquid-type fuel cells comprising:
9 proving a liquid-type fuel cell having an electrode and a fuel, and
10 incorporating into the fuel a fuel additive to increase wettability of the electrode.
- 11 5. The method of claim 4, wherein the fuel additive comprises a surfactant.
- 12 6. The method of claim 5, wherein the amount of surfactant is in the range of
13 0.0001-1% by weight.
- 14 7. A method for improving performance of liquid-type fuel cells comprising:
15 providing a liquid-type fuel cell having a fuel, and
16 incorporating into the fuel a fuel additive to reduce dissolved oxygen in the fuel.
- 17 8. The method of claim 7, wherein the fuel additive comprises an oxygen scavenger.
- 18 9. The method of claim 7, wherein the amount of oxygen scavenger is in the range of
19 0.0001-1% by weight.
- 20 10. A method for improving performance of liquid-type fuel cells comprising:
21 providing a liquid-type fuel cell having a fuel, a catalyst, an electrolyte, and
22 incorporating into the fuel a fuel additive to remove metal ions that are
23 detrimental to the catalyst or electrolyte.
- 24 11. The method of claim 10, wherein the fuel additive comprises a chelating agent.
- 25 12. The method of claim 11, wherein the amount of chelating agent is in the range of
26 0.0001-1% by weight.
- 27 13. A method for improving performance of liquid-type fuel cells comprising:
28 providing a liquid-type fuel cell having a fuel and a proton electrotransfer
29 membrane, and
30 incorporating into the fuel a fuel additive in an amount sufficient to improve
31 performance of said liquid-type fuel cell.
- 32 14. A method for improving performance of liquid-type fuel cells comprising:
33 providing a liquid-type fuel cell having a fuel, a catalyst, an electrode, a proton
34 electrotransfer membrane, and

1 incorporating into the fuel one or more fuel additives that perform one or more of
2 the following functions:

3 (a) reducing CO poisoning to the catalyst,
4 (b) increasing wettability of the electrode,
5 (c) reducing dissolved oxygen in the fuel,
6 (d) removing metal ions that are detrimental to the catalyst or the proton

7 electrotransfer membrane.

8 15. The method of claim 14, wherein the one or more fuel additives are pre-packed
9 for field use.